

Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application.

1. (Currently Amended) A method for dynamically mixing header suppression techniques transmitted over a DOCSIS Data Over Cable Service Interface Specification (DOCSIS) network, comprising the steps of:
- (a) communicating a plurality of header suppression techniques and one or more a unique index numbers assigned to each one of the plurality of header suppression techniques to a cable modem termination system;
- (b) receiving a plurality of data packets to be transmitted;
- (c) identifying which of the received data packets have a header that should be suppressed;
- (d) selecting a header suppression technique from the plurality of header suppression techniques for each of the identified data packets;
- (e) appending a packet header element to each of the identified data packets, the packet header element containing the index number assigned to the header suppression technique selected for each of the identified data packets; and
- (f) suppressing a header of each of the identified data packets using the header suppression technique selected for each of the identified data packets.

2. (Currently Amended) The method of claim 1, further comprising the steps of:

(g) concatenating each data packet within a single DOCSIS transmit burst to form a mixed protocol ~~SHD burst~~; and

(h) transmitting the mixed protocol ~~SHD burst~~ to a cable modem termination system.

3. (Currently Amended) The method of claim 1, wherein each of the received data packets that are unknown ~~IP~~ Internet Protocol (IP) packets are identified ~~for suppression as having a header that should be suppressed~~ in said identifying step (c).

4. (Original) The method of claim 3, wherein DOCSIS protocol header suppression is selected in said selecting step (d) for each of the received data packets that are unknown IP packets.

5. (Currently Amended) The method of claim 1, wherein each of the received data packets that are ~~IP/RTP~~ Internet Protocol (IP)/Real-Time Transfer Protocol (RTP) packets with dynamically changing patterns are identified ~~for suppression as having a header that should be suppressed~~ in said identifying step (c).

6. (Original) The method of claim 5 wherein RTP suppression is selected in said selecting step (d) for each of the received data packets that are IP/RTP packets with dynamically changing patterns.

7. (Currently Amended) The method of claim 1, wherein each of the received data packets that are IP/TCP Internet Protocol/Transmission Control Protocol (TCP) variable length packets are identified for suppression as having a header that should be suppressed in said identifying step (c).

8. (Original) The method of claim 7, wherein dynamic delta encoding suppression is selected in said selecting step (d) for each of the received data packets that are IP/TCP variable length packets.

9. (Currently Amended) A method for expanding data packet headers transmitted over a DOCSIS Data Over Cable Service Interface Specification (DOCSIS) network, comprising the steps of:

(a) receiving a mixed protocol SID burst comprised of one or more data packets having headers suppressed in accordance with a selected one of a plurality of header suppression techniques;

(b) identifying each data packet within the mixed protocol SID burst that is has a suppressed header;

(c) searching a lookup table to identify select a set of rules from a plurality of sets of rules for expanding a suppressed header of each of the data packets identified in step (b); and

(d) expanding a suppressed header of each suppressed of the data packets identified in step (b) according to the a set of rules identified selected in step (c).

10. (Original) The method of claim 9, wherein each data packet identified in said identifying step (b) has an appended packet header element containing an index number.

11. (Currently Amended) The method of claim 10, wherein said searching step (c) uses ~~the~~ each index numbers contained in each appended packet header element to search the lookup table.

12. (Currently Amended) The method of claim 11, wherein DOCSIS protocol header expansion rules are used in said expanding step (d) for ~~each of the received data packets that are unknown IP~~ Internet Protocol (IP) packets.

13. (Currently Amended) The method of claim 11 wherein ~~RTP Real-Time Transfer Protocol (RTP)~~ expansion rules are used in said expanding step (d) for ~~each of the received data packets that are IP/RTP~~ Internet Protocol (IP)/RTP packets with dynamically changing patterns.

14. (Currently Amended) The method of claim 11, wherein dynamic delta encoding expansion rules are used in said expanding step (d) for ~~each of the received data packets that are IP/TCP~~ Internet Protocol (IP)/Transmission Control Protocol (TCP) variable length packets.

15. (Currently Amended) A system for dynamically mixing header suppression techniques transmitted over a DOCSIS Data Over Cable Service Interface Specification (DOCSIS) network, comprising:

one or more cable modems that suppress data packets headers by selectively using one of a plurality of header suppression techniques; and

a cable modem termination system (CMTS) enabled to expand said data packets headers by using a set of expansion rules corresponding to said selected one of said plurality of header suppression techniques, wherein said one or more cable modems assigns one or more a unique index numbers to each one of said plurality of header suppression techniques.

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16. (Currently Amended) The system of claim 15, wherein said one or more cable modems appends a packet header element to each data packet it suppresses having a suppressed header, wherein said packet header element includes said one or more unique index numbers assigned to the header suppression technique used to suppress each data packet header.

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17. (Currently Amended) The system of claim 16, wherein said one or more cable modems concatenates each data packet it suppresses having a suppressed header into a single DOCSIS transmit burst to form a mixed protocol SHD burst.